

THE CYPERACEAE COLLECTED IN NEW GUINEA BY  
L. J. BRASS, II.\*

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*With two plates and one text-figure*

THIS PAPER deals with the genera of the Mapanioideae and most of those of the Scirpoideae. Several collections had previously been examined by Kükenthal, Uittien or Svenson and reference to their determinations is made in the citation of specimens. The treatment of *Cyperus* follows that of Kükenthal in Pflanzenr. 101 (IV. 20): 1935-6.

*Hypolytrum* L. C. Richard

*Hypolytrum compactum* Nees in Linnaea 9: 288. 1835, *nomen*, in Nov. Act. Acad. Caes. Leop. Natur. Cur. 16, suppl. 2: 73. 1843; Kükenth. in Engl. Bot. Jahrb. 59: 53. 1925; 69: 261. 1938; Uitt. in Rec. Trav. Bot. Néerl. 33: 155. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 26: 155. 1936; Ohwi in Bot. Mag. Tokyo 56: 209. 1942.

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., Brass 7457, August 1936, plentiful as scattered ground cover in poorer types of soil (det. Uittien).

New for Papua; previously known from Netherlands New Guinea, North-East New Guinea, Aru Islands, Celebes, Borneo, Philippine Islands and Indo-China.

*Hypolytrum scabrum* Uitt. in Jour. Arnold Arb. 20: 215. 1939.

PAPUA: Western Division: Oroville Camp, Fly R., Brass 7398 (type coll.), Aug. 1936, common plant sporadic in tufts on forest floor. Central Division: Mekeo District, C. T. White 806, July-August 1918.

White 806 is in rather young flower only; it has a more ample inflorescence than the type-collection, the colour throughout is paler and the mottling on the leaves is very indistinct. A similar indistinct mottling has been noticed on some specimens of *H. latifolium*.

*Hypolytrum latifolium* L. C. Rich. in Pers. Syn. 1: 70. 1805; F. Muell. Pap. Pl. 2: 34. 1886; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 191. 1900; Valck. Suring. in Nova Guin. Bot. 8: 709. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 53. 1924; 69: 260. 1938.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg R., Brass 13974, April 1939, alt. 50 m., common in semi-swampy rain-forest of river plains (clumps  $\pm$  1 m. high). PAPUA: Western Division: Lake Daviumbu, Middle Fly R., Brass 7553, August 1936, rain-forest, common undergrowth in damp soil near lake (det. Uittien). Central Division: Kanosia, Carr 11302, Feb. 1935, sea-level, marshy forest (ca. 3 ft. tall) (herb. Canberra). Without definite locality, W. E. Armit, Barton.

SOLOMON ISLANDS: Bougainville: Marmaromino, Kajewski 2188, Sept. 1930, alt. 50 m., rain-forest, common (a rush growing in swampy places up to 1 $\frac{3}{4}$  m. high,

\* Botanical Results of the Richard Archbold Expeditions. See Jour. Arnold Arb. 28: 99-116. 1947.



leaves bright green. San Cristobal: Hinuahaoro, *Brass* 3044, Sept. 1932, alt. 900 m., forest floor. Common name: Ti-pi-rekio).

The species ranges from India through Malaysia to Queensland, though the above appears to be the first definite record from Netherlands New Guinea (unless *H. amplectens* Valck. Suring., op. cit., 708, t. 115, be conspecific) and Bougainville.

Kükenthal in 1938, l.c., cites *Carr* 12010 as belonging to this species, but I am doubtful of this determination. The specimen seen is very slender with narrow leaves and the lower glumes are longer, narrow, and acute; the spikelets are very young.

Concerning the legitimacy of the name, see S. T. Blake in Proc. Roy. Soc. Queensl. 54: 71. 1943.

### Thoracostachyum Kurz

**Thoracostachyum bancanum** (Miq.) Kurz in Jour. As. Soc. Bengal 38 (2): 76. 1869; Uitt. in Rec. Trav. Bot. Néerl. 33: 136. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 26: 136. 1936, with synonymy; Ohwi in Bot. Mag. Tokyo 56: 210. 1942.

*Lepironia bancana* Miq. Fl. Ind. Bat. Suppl. 1: 604. 1860.

*Thoracostachyum subcapitatum* Valck. Suring. in Nova Guin. Bot. 8: 710, t. 107. 1912.

PAPUA: Western Division: Palmer R., 2 miles below junction with Black R., *Brass* 7096, June 1936, alt. 100 m., forming open tufted ground cover in special swamp forests on ridges; same place and date, *Brass* 7097, plentiful as ground cover in swamp forests on low plateaus.

Rather widely spread through Malaya, Sumatra and Borneo. In New Guinea it was previously known only from Netherlands New Guinea.

Of the two collections cited above *Brass* 7096 is in young flower and his 7097 has mature fruit. Both were determined by Uittien.

**Thoracostachyum pandanophyllum** (F. Muell.) Domin in Biblioth. Bot. 85: 484. 1915; Uitt. in Rec. Trav. Bot. Néerl. 33: 138. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 26: 138. 1936, with synonymy.

*Hypolytrum pandanophyllum* F. Muell. Fragm. Phytogr. Austr. 9: 16. 1875.

*Mapania pandanophyllum* (F. Muell.) K. Schum. in K. Schum. & Hollr. Fl. Kaiser Wilhelmsl. 25. 1889; in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 189. 1900.

*Thoracostachyum hypolytroides* (F. Muell.) C. B. Clarke in Hook. f. Fl. Brit. Ind. 6: 681. 1894; Valck. Suring. in Nova Guin. Bot. 8: 710. 1912; Rendle in Gibbs, Fl. Arfak Mts. 250. 1917; Kükenth. in Engl. Bot. Jahrb. 59: 54. 1924.

PAPUA: Western Division: Strickland R., *W. Bäuerlen* in 1885; Lake Daviumbu, Middle Fly R., *Brass* 7634, Sept. 1936, one of the principal plants of the floating islands in lake; same locality *Brass* 7917, Sept. 1936, abundant on floating islands of lake and forming characteristic undergrowth of sago and *Melaleuca* swamp forests (leaves erect to 3 m.; inflorescence pale pink, shorter than the leaves); Lower Fly R., east bank opposite Sturt Island, *Brass* 8118, October 1936, forming characteristic undergrowth of *Erythrina* swamp forests (clumps 2.5-3 m. high, leaves erect).

New for Papua; previously known from Malaya, Sumatra, Borneo, Celebes, Palau Islands, Netherlands and North-East New Guinea, and NE. Queensland. All Brass's specimens had been previously determined by Uittien.



### Paramapania Uittien

*Paramapania simplex* (Ridl.) Uitt. in Rec. Trav. Bot. Néerl. 32: 190. 1935, in Meded. Bot. Mus. Herb. Univ. Utrecht 16: 190. 1935.

*Thoracostachyum simplex* Ridl. in Trans. Linn. Soc. II, Bot. 9: 244. 1916.

NETHERLANDS NEW GUINEA: 4 km. SW. of Bernhard Camp, Idenburg R., *Brass 13481*, March 1939, alt. 850 m., tufted in semishade of flood-swept river banks in rain-forest; 4 km. SW. of Bernhard Camp, Idenburg R., *Brass 13601*, March 1939, alt. 850 m., occasional tufts, slopes of rain-forest ravines. PAPUA: Western Division: Fly R., 528-mile Camp, *Brass 6647*, May 1936, alt. 80 m., very common little floor plant scattered through the ridge forests (det. Uittien).

New for Papua; previously known only from the type collection from the Snow Range, Netherlands New Guinea. *Brass 6647* is much smaller than the others. (the largest leaf seen being only 13 cm. long and 1 cm. wide) with small spikelets about  $6 \times 4$  mm., and somewhat smaller nuts.

*Paramapania parvibractea* (C. B. Clarke) Uitt. in Rec. Trav. Bot. Néerl. 33: 143. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 26: 143. 1936.

*Hypolytrum parvibractea* C. B. Clarke in Kew Bull. 1899: 114. 1899.

*Hypolytrum parvibracteatum* C. B. Clarke in Kew Bull. Add. Ser. 8: 51. 1908; Valck. Suring. in Nova Guin. Bot. 8: 709. 1912; Ridl. in Trans. Linn. Soc. II, Bot. 9: 243. 1916.

*Hypolytrum parvibracteatum* var. *quadriglumatum* Valck. Suring., l.c., and t. 116. 1912.

*Hypolytrum quadriglumatum* Suring., l.c., 709. 1912 (*nomen invalidum?*).

*Mapania montana* Lauterb. & K. Schum. in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 189. 1900.

*Thoracostachyum montanum* (Lauterb. & K. Schum.) Valck. Suring. in Nova Guin. Bot. 8: 710. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 54. 1924; Ohwi in Bot. Mag. Tokyo 56: 209. 1942.

*Thoracostachyum parvibractea* (C. B. Clarke) Kükenth. in Engl. Bot. Jahrb. 69: 261. 1938 (*nomen vix validum*).

*Paramapania amboinensis* Uitt. in Rec. Trav. Bot. Néerl. 32: 191. 1935, in Meded. Bot. Mus. Herb. Univ. Utrecht 16: 191, fig. 4. 1935.

*Paramapania montana* (Lauterb. & K. Schum.) Uitt. in Rec. Trav. Bot. Néerl. 32: 200. 1935, in Meded. Bot. Mus. Herb. Univ. Utrecht 17: 200. 1935 (*nomen provisorium*).

NETHERLANDS NEW GUINEA: East slopes of Cyclops Mountains, *Brass 8944*, 1938, alt. 575 m., occasional floor plant in tall forest (inflorescence purple); Bernhard Camp, Idenburg R., *Brass 13842*, April 1939, alt. 150 m., frequent tufts in rain-forest of lower mountain slopes. PAPUA: Central Division: Dieni, Ononge Road, *Brass 3931*, April-May 1933, alt. 500 m., sporadic occurrence on rain forest floor.

Evidently widely spread in New Guinea and has been found in the Moluccas and Celebes (Uittien, ll.cc.).

Some of the names cited in the synonymy have doubtful nomenclatural status. *Hypolytrum quadriglumatum* Valck. Suring. was published as follows:

“*Hypolytrum parvibracteatum* Clarke var. *quadriglumatum*; nov. var., nisi *H. quadriglumatum* species nova.”

### “Tab. CXVI”

In the explanation of the plate only the ternary combination appears. The binomial *H. quadriglumatum* might be taken as an alternative name,



but because of the use of the word *nisi* (as well as the absence of the binomial from the explanation of the plate) there is at least the possibility that the name should be regarded as a provisional name and therefore invalid.

*Paramapania montana* (Lauterb. & K. Schum.) Uitt. also seems to be a provisional name ["If it (i.e. *Thoracostachyum montanum*) turns out to be the same species, the name of the latter (i.e. *Paramapania amboinensis*) should be altered in *P. montana* Uitt."].

And finally the combination *Thoracostachyum parvibractea* (C. B. Clarke) Kükenth. does not seem to satisfy the requirements of Art. 44. The name was published as follows: "*Th. parvibractea* (C. B. Clarke) Kükenth. comb. nov. — *Th. montanum* Suringar."

There is nothing in the citation to show upon what species of Clarke's Kükenthal based his new combination, though it may be presumed it was *Hypolytrum parvibractea*. The citation of *Th. montanum* Valckenier Suringar and reference to the (much later) work of Uittien leads one to this presumption, but it is no proof.

*Paramapania attenuata* sp. nov. PLATE I.

Rhizoma lignosum obliquum, circa 5 mm. crassum, fibrillis tectum. Folia equitantia, anguste linearia, basin versus angustata et complicata, in apicem filiformem curvum vel flexuosum longe acutata, 30 usque plus 50 cm. longa, circa 4 mm. lata, coriacea, pallide viridia, plurinervia nervis prominulis mediano subtus distinctissimo, sursum carina marginibusque scabra, apice scaberrima. Scapi 10–20 cm. longi, subtrigono-filiformes, 0.3–0.6 mm. crassi, flaccidi, laeves, glabri, basi vaginis angustis sanguineo-fuscis praediti, prope medium vaginam unicam breviter laminiferam pro more gerentes, 1- vel usque 4-stachyi quo in casu ramuli usque ad 13 mm. longi adsunt. Spiculae brunneae 8–10 mm. longae, sub anthesi 3.5 et sub fructu 5 mm. latae. Glumae 3 mm. longae, suboblongae, apice late rotundatae. Flores 2.5–2.8 mm. longae. Squamulae 5. Stigmata 3. Nux ambitu lanceolata longe acuteque acuminato-rostrata, stipitata, trigona, 6 mm. longa, 1 mm. lata, nitide fusca in rostrum curvum paullo pallidius sensim abeuns; stipes alulatus 1 mm. longus.

NETHERLANDS NEW GUINEA: 6 km. SW. of Bernhard Camp, Idenburg R., *Brass* 12930, (TYPE), Feb. 1939, alt. 1200 m., frequent along crests of ridges in rain-forest.

This new species is most nearly allied to *P. longirostris* (Kükenth.) Uitt. but differs in that the glumes are twice as long, the flowers slightly smaller than the glumes, in the indistinctly 3-angled (not 6-angled) nut passing gradually (not abruptly) into the relatively shorter beak. Of the seven scapes on the type material, 3 have each a single spikelet, 2 have 2 each, and 2 have 4 each.

### Mapania Aublet

#### Subgenus *Pandanoscirpus* Uittien

*Mapania papuana* Ridl. in Trans. Linn. Soc. London II, Bot. 9: 246. 1916, Uitt. in Rec. Trav. Bot. Néerl. 33: 151. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 26: 151. 1936.



NETHERLANDS NEW GUINEA: 4 km. SW. of Bernhard Camp, Idenburg R., *Brass* 13097, March 1939, alt. 900 m., abundant in mossy-forest undergrowth (stem up to 40 cm. long and plant  $\pm$  1.5 m. overall; fruits yellow, fleshy).

As yet known only from Netherlands New Guinea.

*Mapania baccifera* C. B. Clarke in Kew Bull. Add. Ser. 8: 53. 1908; Uitt. in Rec. Trav. Bot. Néerl. 33: 279. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 32: 279. 1936.

SOLOMON ISLANDS: Isabel: Tiratona, *Brass* 3219, Nov. 1932, alt. 600 m., common floor plant in mountain forests (fruit yellow; common name "sesala").

Originally described from an inflorescence and a fragment of a leaf collected by Guppy on Shortland Island (Solomon Islands) and somewhat tentatively assigned to sect. (subg.) *Halostemma*. Uittien ll.cc., records it from Netherlands New Guinea and refers it to subgen. *Pandanoscirpus*. Brass's specimen is an excellent one with two immature inflorescences and four mature infructescences. There is an elongated subhorizontal rhizome about 8 mm. thick with a dense tuft of leaves at the end. The leaves are up to 1 m. long and about 1–1.5 cm. wide, long attenuate to the filiform very scabrous tip, but not much narrowed to the somewhat conduplicate base. The scapes are about 10 cm. long and the inflorescence about 3.5 cm. long and 2–2.5 cm. wide; the nut is 7–9 mm. long and 3.5–4 mm. wide.

*Mapania Archboldii* Uitt. in Jour. Arnold Arb. 20: 214. 1939.

PAPUA: Western Division: Palmer R., 2 miles below junction with Black R., *Brass* 7164, July 1936, alt. 100 m., locally abundant in ridge forest undergrowth (achenes black) (type-collection).

*Mapania dictyophlebia* sp. nov. Subgen. *Pandanoscirpus* Uitt. PLATE II.

Rhizoma lignosum, 8 mm. crassum, fibris tectum. Folia subflaccida usque ad circa 60 cm. longa, 10–20 mm. lata, multinervia reticulata nervis 3 validioribus conspicuis pallidis, basin versus angustata et conduplicata, apice in acumen longum subtriquetrum scaberrimum sensim attenuata, marginibus costaque pro majore parte spinuloso-scabra. Scapi 6–10 cm. longi monostachyi, subtrigoni, striati ceterum laeves, glabri, basi gracillimi circa 0.7 mm. crassi squamis nonnullis pallidis laxis breviter obtecti, sursum admodum incrassati circa 1 mm. crassi. Spicula pallide brunnea, 13–15 mm. longa, sub anthesi fere oblonga circa 5 mm. lata, sub fructu tandem subglobosa usque ad 14 mm. lata. Glumae ovato-oblongae, obtusae, 8 mm. longae, multinerves, marginibus hyalinae sursum minute ciliolatae. Flores oblique lineares, 9 mm. longae. Nux obovato-pyriformis, apiculata, breviter stipitata, haud angulata, indistincte crebreque rugulosa, 4.2 mm. longa (stipite 0.8 mm. longo incluso), 2.4 mm. lata; exocarpium spongiosum; endocarpium durum, nigrum.

NETHERLANDS NEW GUINEA: 4 km. SW. of Bernhard Camp, Idenburg R., *Brass* 13428 (TYPE), March 1939, alt. 850 m., rain-forest, one clump on the bank of a small stream.

Allied to *M. Archboldii* Uitt., differing in the broader, less rigid, conspicuously tessellated leaves, smooth scapes, smaller spikelets and flowers and smaller nut less acuminate at each end.

*Mapania cuspidata* (Miq.) Uitt. in Jour. Arnold Arb. 20: 213. 1939.

*Lepironia cuspidata* Miq. Fl. Ind. Bat. Suppl. 1: 603. 1860.

*Mapania petiolata* C. B. Clarke var. *cuspidata* (Miq.) Uitt. in Rec. Trav. Bot.



Néerl. 33: 282. 1936, in Meded. Bot. Mus. Herb. Univ. Utrecht 32: 282. 1936; with synonymy.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg R., *Brass* 13896, April 1939, alt. 120 m., frequent in rain-forest of lower mountain slopes.

SOLOMON ISLANDS: San Cristobal: Hinuahaoro, *Brass* 3046, Sept. 1932, alt. 900 m., forest floor, common (flower yellow).

The typical form of the species has been recorded from Malaya, Sumatra, Java and Borneo. Uittien, l.c., distinguishes three varieties, closely connected with one another and the typical form by intermediates; he refers (1939, l.c.) *Brass* 7382 from the Palmer River, Papua (which I have not seen) to var. *petiolata* (C. B. Clarke) Uitt. l.c., which appears to be pan-Malaysian. *Carr* 12772 from Koitaki, Papua, in herb. Canberra, also appears to belong to this variety; it was referred to *M. petiolata* C. B. Clarke by Kükenthal in Engl. Bot. Jahrb. 69: 261. 1938. *Brass* 3046 and 13896 agree with one another as to foliage, which approaches that of var. *angustifolia* (Uitt.) Uitt. rather than var. *petiolata*, but no. 13896 has the short spikelets about 1.5 cm. long of the typical form on short scapes, 4–8 cm. long.

#### Subgen. *Cephaloscirpus* (Kurz) Bentham & Hooker

*Mapania Moseleyi* C. B. Clarke in Kew Bull. Add. Ser. 8: 55. 1908.

*Mapania Ledermannii* Kükenth. in Engl. Bot. Jahrb. 59: 57. 1924; Ohwi in Bot. Mag. Tokyo 56: 212. 1942.

NETHERLANDS NEW GUINEA: 4 km. SW. of Bernhard Camp, Idenburg R., *Brass* 13429, March, 1939, alt. 850 m., rain-forest undergrowth, frequent on steep slopes; 6 km. SW. of Bernhard Camp, Idenburg R., *Brass* 12804, Feb. 1939, alt. 1200 m., tufted terrestrial, occasional in rain-forest.

Uittien in Jour. Arnold Arb. 20: 213. 1939, cites the type of *Mapania Ledermannii* under *Mapania Moseleyi* Clarke f. *latifolia* forma nov. There appears to be some confusion in the paragraphs concerned and to judge from the description of the leaves of f. *latifolia* and the width of the leaves of other specimens cited, it would appear that Uittien's intention was to regard the type of *M. Ledermannii* Kükenth. (*Ledermann* 12990), *Docters van Leeuwen* 10452a and *Gyellerup* 524 as conspecific with *M. Moseleyi*. *Mapania Moseleyi* f. *latifolia* is then to be regarded as based entirely on *Brass* 7384 (which I have not seen) which differs from the type in having no stem-leaves besides the characters given in the Latin diagnosis. *Brass* 12804 and 13429 have each two stem-leaves; the leaves on 12804 are 8–10 mm. wide, in 13429 they are 5–7 mm. wide.

*Mapania macrocephala* (Gaud.) K. Schum. in Warb. in Engl. Bot. Jahrb. 13: 265.

1891; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 189. 1900; Valck. Suring. in Nova Guin. Bot. 8: 711. 1912; Ridl. in Trans. Linn. Soc. II, Bot. 9: 245. 1916; Kükenth. in Engl. Bot. Jahrb. 59: 56. 1924; Rehd. in Jour. Arnold Arb. 14: 65. 1933; Ohwi in Bot. Mag. Tokyo 56: 211. 1942.

*Hypolytrum macrocephalum* Gaud. in Freycin. Voy. 414. 1826.

*Cephaloscirpus macrocephalus* (Gaud.) Kurz in Jour. As. Soc. Bengal 38 (2): 83. 1869.

*Lepironia macrocephala* (Gaud.) Miq. Ill. Fl. l'Arch. Ind. 64, t. 27. 1871.



PAPUA: Western Division: Palmer R., 2 miles below junction with Black R., *Brass* 7241, July 1936, alt. 100 m., in large clumps in swamps and on banks of streams cutting flood plains (leaves  $\pm$  4.5 m. long, 6 cm. broad; infructescence  $\pm$  8 cm. long, 9 cm. diam.) (det. Uittien). Central Division: Upoia, Vailala R., *Brass* 1158, March 1926, in large clumps in swampy soil resembling in appearance a young *Pandanus* (leaves 6-7 ft. long, recurved, margins serrate; peduncle erect 18-12 in. high, 3-angled with one or two long leaf-like bracts with sheathing leaves on lower portion).

SOLOMON ISLANDS: Bougainville: Kugumaru, Buin, *Kajewski* 1987, July 1930, alt. 150 m., in swamps, common (a rush up to 2 m. high, leaves slightly serrated, buds covered with short fine silky hair).

Previously known from the Moluccas, Admiralty Islands, New Ireland, Netherlands New Guinea and the Central Division of Papua (*Brass* 1158, cf. Rehder, l.c.). It also occurs in north-east Queensland (S. T. Blake in Proc. Roy. Soc. Queensl. 58: ined.).

### Lepironia L. C. Richard

*Lepironia articulata* (Retz.) Domin in Biblioth. Bot. 85: 486. 1915.

*Restio articulatus* Retz. Observ. 4: 14. 1786.

*Lepironia mucronata* L. C. Rich. in Pers. Syn. 1: 70. 1805; Kükenth. in Engl. Bot. Jahrb. 59: 58. 1924.

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., *Brass* 7605, August 1936, erect in bluish stands, over 2 m. high, forming small islets in the swamps; Gaima, Lower Fly R. (east bank), *Brass* 8355, Nov. 1936, associated with *Scleria chinensis* and *Restio* sp. in extensive open marshes in savannah forest.

New for Papua. The species is known from Malaysia, Caroline Islands, N. and E. Australia, Fiji, Madagascar, and is cultivated in China. In New Guinea it was previously known only from a single collection from North-East New Guinea. The nomenclature has been discussed by me in Proc. Roy. Soc. Queensl. 54: 71, 72. 1943.

### Cyperus Linnaeus

#### Subgen. *Eucyperus* (Griseb.) C. B. Clarke

*Cyperus stoloniferus* Retz., Observ. 4: 10. 1786; Valck. Suring. in Nova Guin. Bot. 8: 698. 1912.

*Cyperus Carrii* Kükenth. in Engl. Bot. Jahrb. 69: 256. 1938.

PAPUA: Central Division: Hisiu, *Carr* 11415, Feb. 1935, sandy beaches, sea-level (herb. Canberra).

It was on this collection that Kükenthal founded his *C. Carrii* which he placed in subgenus *Mariscus* sect. *Thunbergiani*. The specimen in herb. Canberra has well-developed tubers, is certainly *Eucyperus*, and, although somewhat immature as to the nuts, is evidently the wide-spread chiefly coastal *C. stoloniferus* Retz. The specimen seen by Kükenthal apparently bore no tubers; otherwise his description accords with the specimen seen by me. *Cyperus stoloniferus* ranges from Madagascar and India to Queensland, but has not previously been recorded for Papua.

*Cyperus digitatus* Roxb. Hort. Beng. 81. 1814, *nomen*, Fl. Ind. 1: 205. 1820; F. Muell. in Proc. Linn. Soc. N.S. Wales II, 2: 422. 1887, and Pap. Pl. 2: 69. 1890; Valck. Suring. in Nova Guin. Bot. 8: 699. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 45. 1924, in Pflanzenr. 101 (IV. 20): 55. 1935.



*Cyperus auricomus* Sieb. sensu K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 191. 1900, not *C. auricomus* Sieb.

*Cyperus racemosus* Retz. sensu K. Schum. & Lauterb., l.c., 192, not *C. racemosus* Retz.

*Cyperus auricomus* var. *microstachyus* Boeck. in K. Schum. & Hollr. Fl. Kaiser Wilhelmsl. 23. 1889.

PAPUA: Western Division: Penzara, between Morehead and Wassi Kussa Rivers, *Brass 8446A*, Dec. 1936, in marshy shallows of waterhole (det. Kükenthal). Central Division: Haga, Loloki River, *Brass 892*, Jan. 1926, growing on swamp borders, 2 ft. high.

Kükenthal, in Engl. Bot. Jahrb. 69: 255. 1938, refers *Carr 15532* to this species, but the specimen under this number in herb. Canberra belongs to *C. distans* L.f.

*Cyperus malaccensis* Lam. Illustr. 1: 146. 1791; Kükenth. in Pflanzenr. 101 (IV. 20): 86. 1935, and in Engl. Bot. Jahrb. 69: 255. 1938.

PAPUA: Western Division: Lower Fly R. east bank opposite Sturt Island, *Brass 8083*, October 1936, on river mud flats; Gaima, Lower Fly R. (east bank), *Brass 8312*, Nov. 1936, codominant with no. 8311 (= *Scirpus grossus* L.f.) in a dense sedge community, 1–1.2 m. high, on open sandy foreshores covered by spring tides. Gulf Division: Vailala Estuary, *Brass 1185*, March 1926, on tidal mudbanks (3–4 ft. high). Central Division: Arda R., *Carr 11427*, Feb. 1935, sea-level, marshes along river bank, growing in brackish water (ca. 2 ft. tall—native name "Geida," used for making sleeping mats, etc.). Eastern Division: Domara R., *Brass 1582*, May 1926, on muddy river bank (stems used by natives for mat-making).

Widely spread in the Eastern Hemisphere, from Mesopotamia to Polynesia and Northern Australia. Kükenthal has seen all Brass's collections and nos. 1185, 1582 are cited in his monograph.

*Cyperus Zollingeri* Steud. in Zollinger, Verz. Ind. Archip. 2: 62. 1854, *nomen*, Synops. Cyp. 17. 1855; Kükenth. in Engl. Bot. Jahrb. 59: 44. 1924; 69: 255. 1938, in Pflanzenr. 101 (IV. 20): 133. 1935; Ohwi in Bot. Mag. Tokyo 56: 200. 1942.

NETHERLANDS NEW GUINEA: Balim R., *Brass 11730*, Dec. 1938, alt. 1600 m., deforested slopes, abundant on sandy soil. PAPUA: Western Division: Gaima, Lower Fly R. (east bank), *Brass 8249*, Nov. 1936, open savannah forest, yellowish sedge common on hard soils (det. Kükenthal). Central Division: Mafulu, *Brass 5407*, Sept.-Nov. 1933, alt. 1250 m., rare on rubbly soil ridge-crest in *Castanopsis* forest.

The species is widely spread in the Old World tropics.

*Cyperus distans* L.f. Suppl. 103. 1781; F. Muell. Pap. Pl. 1: 73. 1876; Becc. in D'Albertis New Guinea 2: 399. 1880; Valck. Suring. Nova Guin. Bot. 8: 699. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 44. 1924, in Pflanzenr. 101 (IV. 20): 137. 1935; Ohwi in Bot. Mag. Tokyo 56: 199. 1942.

PAPUA: Central Division: Laloki R., *C. T. White 172*, July-August 1918; Mafulu, *Brass 5533*, Sept.-Nov. 1933, 1250 m., wet ground on roadside in forest; Isuarava, *Carr 15532*, Feb. 1936, alt. ca. 4500 ft., damp places (herb. Canberra); Bella Vista, *C. T. White 418*, July-August 1918, alt. ca. 5000 ft.

Cosmotropical; Carr's collection was referred to *C. digitatus* Roxb. by Kükenthal in Engl. Bot. Jahrb. 69: 255. 1938.

*Cyperus Iria* L. Sp. Pl. 1: 45. 1753; K. Schum. in Notizbl. Bot. Gart. Mus. Berlin 2: 95. 1898; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 192. 1900; Valck. Suring. in Nova Guin. Bot. 8: 698. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 44. 1924, in Pflanzenr. 101 (IV. 20): 150. 1935.



PAPUA: Western Division: Daru Island, *Brass 6055*, March 1934, road ditches, not common; Daru Island, *Brass 6298*, March 1936, wet ground in open situations, not common (det. Kükenthal).

New for Papua. The species is widely spread in the tropical and some subtropical parts in Asia and Australia, and occurs, apparently as an introduction, in parts of the United States and the West Indies.

*Cyperus platystylis* R. Br. Prodr. 214. 1810.

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., *Brass 7631*, August 1936, common on swamp margins and floating islands of lake (det. Kükenthal).

New for New Guinea. The species has been recorded from south-east Asia (India to Malaya), Java, Borneo, Queensland and New South Wales.

*Cyperus diffusus* Vahl, Enum. 2: 321. 1806; F. Muell. Pap. Pl. 1: 31. 1876; K. Schum. & Hollr. Fl. Kaiser Wilhelmsl. 24. 1889; Warb. in Engl. Bot. Jahrb. 13: 264. 1891; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 192. 1900; Palla in Rechinger, Denkschr. Math.-Naturw. Kais. Akad. Wiss. Wien 89: 498. 1913; Ridl. in Trans. Linn. Soc. II, Bot. 9: 241. 1916; Ohwi in Bot. Mag. Tokyo 56: 199. 1942.

*Cyperus pubisquama* Steud. in Zoll. Verz. Ind. Arch. 2: 62. 1854; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 192. 1900.

*Cyperus diffusus* var. *macrostachyus* Boeck. in Linnaea 35: 534. 1868; Kükenth. in Pflanzenr. 101 (IV. 20): 209. 1936.

*Cyperus diffusus* var. *pubisquama* (Steud.) Hook. f. in Trimen, Handb. Fl. Ceylon 5: 28. 1900; Kükenth. in Engl. Bot. Jahrb. 59: 43. 1924.

*Cyperus diffusus* var. *celebicus* (Miq.) Kükenth. in Pflanzenr. 101 (IV. 20): 208. 1936.

*Cyperus diffusus* f. *macrostachyus* (Boeck.) Valck. Suring. in Nova Guin. Bot. 8: 697. 1912.

*Cyperus diffusus* f. *microstachya* Valck. Suring. l.c.

*Cyperus diffusus* f. *princeps* Valck. Suring. l.c.

*Cyperus diffusus* f. *celebicus* (Miq.) Kükenth. in Engl. Bot. Jahrb. 59: 43. 1924.

PAPUA: Without definite locality, *Mrs. H. P. Schlenker*, Sept. 1909. Western Division: Lake Daviumbu, Middle Fly R., *Brass 7690*, Sept. 1936, in semi-shade in swamp-margins; Lower Fly R., east bank opposite Sturt Island, *Brass 8141*, October 1936, plentiful as scattered ground cover in open parts of *Erythrina* swamp forests; Penzara, between Morehead and Wassi Kussa Rivers, *Brass 8445*, Dec. 1936, semi-shade, in creek at margin of rain-forest. Central Division: Mekeo District, *C. T. White 810*, July-Aug. 1918.

SOLOMON ISLANDS: San Cristobal: Balego-nagonago, *Brass 2705*, August 1932, alt. 1500 ft., pathways and clearings in the rain-forests.

*Brass 2705*, *8141*, *White 810*, and *Schlenker's* specimen correspond more or less to *C. diffusus* var. *macrostachyus* Boeck. and *Brass 8141* was so determined by Kükenthal. But Kükenthal has also determined *Brass 7690* as belonging to this variety, though to me the specimen appears to be at least as close to the typical form as is *Brass 8445*, determined by Kükenthal simply as *C. diffusus*. The species is somewhat variable and two entities may indeed be involved but to judge from the series of specimens seen by me from Malaya, Philippine Islands and Queensland and those cited above, var. *macrostachyus* is too closely connected with the typical form by intermediates to warrant nomenclatural recognition. The degree of spreading of the glumes, which has been stressed as a distinguish-



ing character, seems to depend to some extent on variations in conditions during the drying of the specimen and to some extent also on the physiological state of the plant at the time of gathering. The length and the direction of the mucro on the glumes are certainly inconstant.

*Cyperus pubisquama* Steud. and *C. diffusus* var. *macrostachyus* Boeck. appear to have been founded on the same type, or at least on the same collection. The latter ternary combination has priority over *C. diffusus* var. *pubisquama* (Steud.) Hook. f. (1900), a combination made independently at a later date by Kükenthal (1924, l.c.). *Cyperus diffusus* f. *princeps* Valck. Suring. appears to be what Suringar takes as the typical form.

This wide-spread tropical species seems not to have been recorded previously from the Solomon Islands.

*Cyperus cinereo-brunneus* Kükenth. sp. nov. in sched. (Sect. *Incurvi* Kükenth.).

FIG. 1, A.

Rhizoma breve? Culmus (unicus visus) 43 cm. altus, apice 2 mm. crassus, acute triqueter et leviter compressus, angulis sursum minute scaberulus, basi solum foliatus. Folia plura culmo multo usque duplo longiora, linearia, longe acuteque attenuata, 3.5–5 mm. lata, carina et marginibus plerumque recurvis vel revolutis tenuiter scabra, nervis 3 quam ceteris plus conspicuis; vaginae brunneae. Bracteae 4 foliiformes, inflorescentiam superantes, ima culmo longior. Anthela semicomposita; radii 5 fere filiformes, subtrigoni, angulis sursum scaberuli, imus 4 cm. longus; prophylla pallida brunneotincta, ore obliquissima; bracteolae fere squamiformes; radioli brevissimi. Spiculae 3–5-nim digitatae vel solitariae, cinereo-brunneae, lineares, acutae, compressae, 8–10 mm. longae, ca. 2 mm. latae, 12–16-florae, Rhachilla recta, vix alata. Glumae subcoriaceae, 2.3–2.7 mm. longae, (explanatae) oblongo-ovatae, obtusae, mucronatae, crebre circa 15–17-nerves in parte superiore sola distincte carinatae, incurvae, basi articulatae, marginibus subhyalinae et sursum admodum involutae, 3–4 imae vacuae gradatim breviores. Stamina 3; antherae 0.7 mm. longae, apice haud setosae; filamenta linearia ferruginea. Stylus 0.7–0.9 mm. longus, ima basi excepta pilosulus; stigmata 3 pilosula, 0.5–0.6 mm. longa. Nux ellipsoidea, acuta, triquetra, lateribus concava, circa  $\frac{1}{2}$  glumam adaequans, 1.4–1.5 mm. longa, 0.7–0.8 mm. lata.

PAPUA: Western Division: Oroville Camp, Fly R., Brass 7418 (TYPE), August 1936, in tufts on forest-floor.

The specimen seen consists of a single culm with a very short piece of rhizome attached. The label bears the determination "*Cyperus cinereo-brunneus* Kükenth. sp. nov." There is no evidence that a description has been published or even drawn up.

The species appears to be most closely allied to *C. subpapuanus* Kükenth. but has narrow leaves, the glumes incurved to the tip with smooth not scabrous keel and with more numerous nerves, acute nuts and a longer style. The narrow leaves, incurved tips of the glumes and acute nut recall *C. meistostylus* S. T. Blake, but the leaves are more numerous, the spikelets are more distinctly digitate, the nut is relatively shorter and the style is longer. It somewhat resembles the Australian *C. semifertilis* S. T.



Blake in appearance and in that the lowermost glumes are smaller and empty, but it differs in that all the flowers (except perhaps the one uppermost in the spikelet) are bisexual, in the longer glumes, and in that the nut is much smaller than the glume and has concave sides.

*Cyperus meistostylus* sp. nov. (Sect. *Incurvi* Kükenth.). FIG. 1, B.

Herba graminea perennis, rhizomate brevissimo. Culmi caespitosi, erecti, acute triquetri, laeves, 26–33 cm. alti, apice usque 2 mm. crassi. Folia pauca prope basin culmi stipata quorum superiora culmo breviora vel inflorescentiam valde superantia, linearia, sursum longe attenuata, basin versus haud vel minime angustata, 5–7 mm. lata, tenuiter nervosa nervis 3

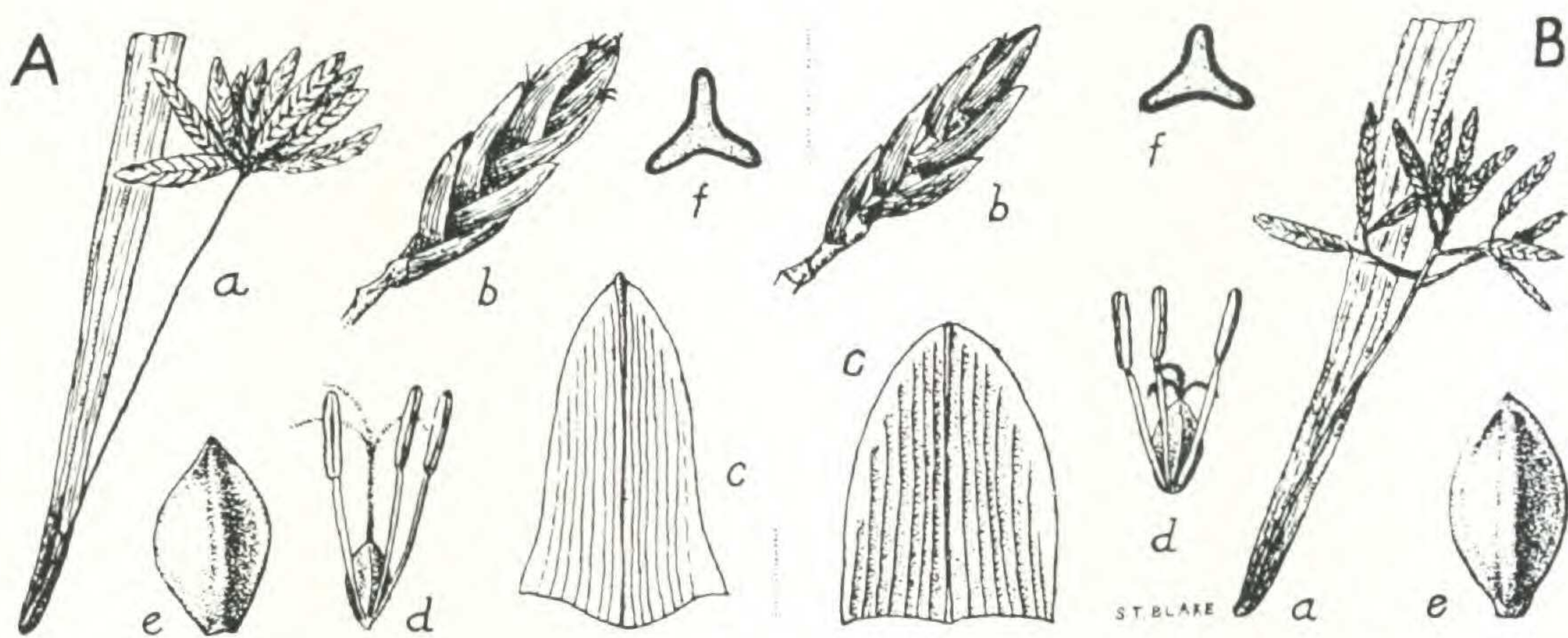


FIG. 1. A. *Cyperus cinereobrunneus* Kükenth.; B. *Cyperus meistostylus* S. T. Blake: a. one of the longer rays of the inflorescence with the lower part of its bract,  $\times 1$ ; b. upper part of spikelet with the lower glumes removed to show rhachilla,  $\times 4$ ; c. glume, flattened out,  $\times 10$ ; d. flower,  $\times 10$ ; e. nut,  $\times 10$ ; f. transverse section of nut,  $\times 10$ . Figures from type-specimens.

plus prominulis, carina marginibusque sursum minute scabra; vaginae purpurascens. Bracteae foliiformes valde inaequales, 3 inflorescentia longiores et ima usque ad 30 cm. longa. Anthela semicomposita, contracta, 3.5–4.5 cm. diam.; radii 4 usque ad 3 cm. longi, rigidi, compressi uno latere concavi; radioli, si adsunt, breves; prophylla purpureo-striata, ore obliquissima. Spiculae 3–5-nim approximatae, haud digitatae, lineares, acutae, compressae, 5–12 (plerumque 7–8) mm. longae, 1.5 mm. latae, 8–16-florae. Rhachilla recta vix alata. Glumae laxiusculae tandem subpatulae, fusco-sanguineae, 2–2.4 mm. longae, (explanatae) oblongo-ovatae apice late angustave rotundatae, muticae, basi articulatae, 13–15-nerves, carina leviter incurvae ejus apice minute setulosae, marginibus glabrae vix hyalinae. Stamina 3, antherae lineares, 0.7 mm. longae apice laeves glabraeque; filamenta linearia ferruginea. Nux elliptica, acuta, triquetra angulis rotundata lateribus concava, brunnea, punctulata,  $\frac{2}{3}$ – $\frac{3}{4}$  glumae adaequans, circa 1.6 mm. longa et 0.85 mm. lata. Stylus brevissimus minus quam 0.1 mm. longus; stigmata 3, brevia, ca. 0.5 mm. longa, pilosula.

PAPUA: Central Division: Dieni, Ononge Road, Brass 3933 (TYPE), May 1933, alt. 500 m., scattered through rain-forest and common in regrowth.

The specimen seen consists of a tuft of three culms of which one bears



a young inflorescence, another a mature and the third an over-mature inflorescence. One culm has the uppermost leaf much shorter than the culm; on the others the leaves are very long, up to 42 cm.

The species is allied to *C. tetraphyllus* R.Br., *C. subpapuanus* Kükenth., *C. papuanus* Ridl. and *C. pedunculatus* F. Muell. In appearance it resembles rather closely the Australian *C. tetraphyllus*, but differs in the less digitate spikelets with longer relatively narrower, less broadly rounded, less strongly incurved glumes with more numerous nerves, anthers with non-setulose tips, the nut decidedly shorter than the glumes, rather narrower and more acute with more deeply concave sides, and in the pilosulose stigmas. From the other three species it differs in the narrower leaves; from *C. subpapuanus* it is further distinguished by the non-scabrous keel of the scarcely mucronate glumes which are scarcely excurved at the tip and have more numerous nerves, and by the acute rather than obtuse tip of the nut; from *C. papuanus*, of which the ripe nut is unknown, it is further distinguished by the spikelets not digitate, the broader loosely imbricate glumes and the smooth tips to the anthers; and from *C. pedunculatus* it further differs by its fewer bracts, smaller narrower spikelets less digitately arranged, the rather smaller more obtuse less coriaceous muticous glumes, much shorter style and stigmas, and (relative to the glume) rather larger nut with more deeply concave sides and more acute tip.

*Cyperus pedunculatus* F. Muell. Fragm. 8: 266. 1874; C. B. Clarke in Kew Bull. 1899: 113. 1899; Valck. Suring. in Nova Guin. Bot. 8: 697. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 43. 1924, in Pflanzenr. 101 (IV. 20): 222. 1936.

*Cyperus montis-sellae* K. Schum. in Warb. in Engl. Bot. Jahrb. 18: 186. 1894; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 191. 1900; Valck. Suring. l.c. 698.

*Cyperus pedunculatus* var. *floribundus* Kükenth. in Engl. Bot. Jahrb. 59: 44. 1924, in Pflanzenr. 101 (IV. 20): 223. 1936.

*Cyperus pedunculatus* var. *atrocastaneus* Kükenth. in Engl. Bot. Jahrb. 69: 256. 1938.

PAPUA: Central Division: Isuarava, Carr 15451, Feb. 1936, alt. ca. 4000 ft., open places (herb. Canberra). Eastern Division: U-uma River, Brass 1437, May 1926, on creek-banks (common name "gudua").

In Pflanzenr., Kükenthal (1936) refers Brass 1437 to var. *floribundus* Kükenth. while Carr 15451 is a syntype of var. *atrocastaneus* Kükenth. Judged from the material in the Australian herbaria the species varies somewhat in size and degree of division of the inflorescence, colour, size (2.6–3.5 mm. in length), and degree of inrolling of the glumes and in the shape of the nut. The nut varies in outline from obovate to ovate-elliptic with the apex obtuse to more or less acute; in length it is about half as long as the glume. Mueller's type specimens have elongated rays with rather pale coloured glumes; some of the inflorescences are overmature. Other specimens, particularly when immature (as in the case of Carr 15451), have intensely coloured glumes, sometimes nearly black. *Cyperus pedunculatus* var. *floribundus* appears to comprise the larger plants with



very mature spikelets which keep on lengthening after the lower glumes have fallen away; var. *longibracteatus* Domin in *Biblioth. Bot.* 85: 425, fig. 98. 1915\* and var. *atrocastaneus* are young or youngish plants with short rays.

Outside New Guinea the species occurs in rain-forests in Eastern Queensland.

*Cyperus Haspan* L. *Sp. Pl.* 1: 45. 1753 (excl. *Herb. Linn.*); Valck. *Suring.* in *Nova Guin. Bot.* 8: 697. 1912; Ridl. in *Trans. Linn. Soc. II, Bot.* 9: 241. 1916; Kükenth. in *Pflanzenr.* 101 (IV. 20): 247. 1936, in *Engl. Bot. Jahrb.* 69: 256. 1938; Ohwi in *Bot. Mag. Tokyo* 56: 200. 1942.

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., *Brass* 7530, August 1936, savannahs, occasional on margins of swamps (det. Kükenthal); Daru Island, *Brass* 6053, March 1934, common in road ditches, stems 3-angled. Central Division: Koitaki, *Carr* 12276, May 1935, swamps in open savannah land, ca. 1500 ft. (ca. 2 ft. tall).

Carr's specimens represent the form with creeping rhizomes; the collection was cited by Kükenthal, 1938. *Brass* 6053 appears also to represent this form, while the tufted form is represented by the other collection. These collections are the only ones known from Papua of this widely spread species. It has not been reported from North-East New Guinea.

*Cyperus aquatilis* R. *Br. Prodr.* 213. 1810.

PAPUA: Western Division: Daru Island, *Brass* 6056, March 1934, common in road ditches, stem 3-angled.

Previously known only from N. and NE. Australia. The taxonomy has been discussed elsewhere in *Proc. Roy. Soc. Queensl.* 51: 36-40. 1940.

#### •Subgen. *Juncellus* (Griseb.) C. B. Clarke

*Cyperus pygmaeus* Rottb. *Descr. et Icon.* 20, t. 14, fig. 4, 5. 1773; Valck. *Suring.* in *Nova Guin. Bot.* 8: 697. 1912.

*Cyperus Michelianus* (L.) Link subsp. *pygmaeus* (Rottb.) Aschers. & Graebn. *Synops.* II. 2: 273. 1903; Kükenth. in *Engl. Bot. Jahrb.* 59: 42. 1924, in *Pflanzenr.* 101 (IV. 20): 312, fig. 35, F-G. 1936.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg R., *Brass* 14083, April 1939, on logs floating in lagoons. PAPUA: Western Division: Penzara, between Morehead and Wassi Kussa Rivers, *Brass* 8439, Dec. 1936, abundant along margins of waterhole.

Previously recorded from North-East New Guinea. The species is widely spread through Africa, S. and E. Asia to Australia.

C. B. Clarke in *Jour. Linn. Soc.* 21: 29-30. 1884 has set out the evidence for treating *Scirpus Michelianus* L. [*Cyperus Michelianus* (L.) Link] as generically distinct from *Cyperus pygmaeus* and, although the differential characters are not always so obvious as implied by Clarke, I believe his conclusions to be correct. Kükenthal in *Pflanzenr.* 101 (IV. 20): 14 and 311 regards *S. Michelianus* as a somewhat anomalous species of *Cyperus* differing only in the spiral, not distichous glumes, and entirely ignores the minute differences in style and nut structure discussed by Clarke. But

\* To judge from specimens collected near the type-locality which agree with the description and figure; I have not seen Domin's specimens.



even if the two forms were admitted as congeneric it seems impossible to me to treat *C. pygmaeus* as a subspecies of *C. Michelianus* as has been done by Kükenthal, l.c., 312, following Ascherson & Graebner.

The two collections cited above consist of greatly elongated plants answering more or less to Kükenthal's *C. Michelianus* subsp. *pygmaeus* f. *filifolius* (Franch. & Sav.) Kükenth., l.c., 314, and *Brass 8439* was received labelled as such. But similarly elongated individuals are quite common in numerous annual Cyperaceae and at least in most cases are due to local environmental conditions, and it seems quite unnecessary to distinguish them taxonomically.

#### Subgen. *Pycreus* (Beauv.) C. B. Clarke

*Cyperus globosus* All. Fl. Pedem. 49. 1789; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 191. 1900; Kükenth. in Engl. Bot. Jahrb. 59: 42. 1924, in Pflanzenr. 101 (IV. 20): 352. 1936.

NETHERLANDS NEW GUINEA: Balim R., *Brass 11819*, Dec. 1938, alt. 1600 m., deforested slopes, common on moist sandy soil; 9 km. NE. of Lake Habbema, *Brass 10744*, Oct. 1938, alt. 2800 m., abundant on a native clearing in the forest in large weak clumps; Bele R., 18 km. NE. of Lake Habbema, *Brass 11541*, Nov. 1938, alt. 2200 m., covering a small sandy beach in river. PAPUA: Western Division: Gaima, Lower Fly R. (east bank), *Brass 8309*, Nov. 1936, common on sandy foreshores.

A species widely spread in the Old World, but in New Guinea previously known from North-East New Guinea only. Valckenier Suringar, in Nova Guin. Bot. 8: 697. 1912 cites "*Cyperus globosus* forma *strictus* Cl." from Netherlands New Guinea. Such a combination was not made by Clarke and apparently *C. globosus* var. *strictus* C. B. Clarke was intended. Kükenthal in Pflanzenr. 101 (IV. 20): 355. 1936 cites as a synonym of *C. globosus* var. *nilagiricus* (Hochst.) C. B. Clarke "*C. globosus* f. *stricta* Suringar, Het gesl. Cyperus in d. Mal. Arch. (1898) 58, t. II, fig. 12; non C. B. Clarke"; this appears not to refer to New Guinea specimens.

Brass's specimens are much closer to the typical form of the species than to any of the described varieties. His *8309* has the nut broadest at the middle and Kükenthal has in MS. suggested distinguishing it as a variety. But from the material of the species in the Queensland Herbarium there seems a perfect intergrading series from such oblong-elliptic nuts to the much more usual obovate nuts; in other words the widest part of the nut is at or a little above the middle, and in the latter case the nut is sometimes narrowed to a greater degree towards the base than towards the apex.

*Cyperus sulcinus* C. B. Clarke in Jour. Linn. Soc. 21: 56. 1884; Kükenth. in Engl. Bot. Jahrb. 59: 42. 1924, in Pflanzenr. 101 (IV. 20): 364, fig. 43. 1936.

PAPUA: Central Division: Sogere, *L. S. Smith N. G. 51*, May, 1944, alt. ca. 450 m., slender sedge 6 in. high growing along track through dry low-lying area.

Previously recorded from North-East New Guinea. Elsewhere known from India to Tonkin and the Moluccas.

*Cyperus polystachyos* Rottb. Descr. et Icon. 39, t. 11, fig. 1. 1773; K. Schum. in Engl. Bot. Jahrb. 9: 195. 1888; Boeck. in Engl. Bot. S.M.S. Gazelle 4 (1): 14. 1889; Valck. Suring. in Nova Guin. Bot. 8: 696. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 42. 1924, in Pflanzenr. 101 (IV. 20): 367. 1936.



PAPUA: Western Division: Daru Island, *Brass 6284*, March 1936, mixed with other sedges or in small pure stands in swamp-margins (det. Kükenthal).

Widely spread throughout the warmer parts of the world, but not yet found on the main island of New Guinea.

*Cyperus nervulosus* (Kükenth.) S. T. Blake in Proc. Roy. Soc. Queensl. 51: 41. 1940.

*Cyperus pumilus* var. *nervulosus* Kükenth. in Pflanzenr. 101 (IV. 20): 378. 1936.

PAPUA: Central Division: Baroka, Mekeo District, *Brass 3731*, April 1933, alt. 30 m., damp savannah flat, plentiful.

Previously known only from N. and NE. Australia.

#### Subgen. *Mariscus* (Gaertn.) C. B. Clarke

*Cyperus stenophyllus* Valck. Suring. in Nova Guin. Bot. 8: 701, t. 114. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 47. 1924.

*Cyperus ornans* Valck. Suring., l.c., 700, t. 113. 1912; Kükenth. in Pflanzenr. 101 (IV. 20): 418. 1936, in Engl. Bot. Jahrb. 69: 256. 1938.

*Cyperus stenophyllus* Valck. Suring. var. *ornans* (Valck. Suring.) Kükenth. in Engl. Bot. Jahrb. 59: 47. 1924.

*Cyperus ornans* Valck. Suring. var. *stenophyllus* (Valck. Suring.) Kükenth. in Pflanzenr. 101 (IV. 20): 419. 1936.

PAPUA: Central Division: Kanosia, *Carr 11107*, Feb. 1935, alt. ca. 100 ft., damp places under light shade (herb. ca. 2 ft. tall) and *Carr 11346*, Feb. 1935, alt. ca. 50 ft., river banks in forest (herb. ca. 15 in. tall) (both in herb. Canberra).

These specimens were cited by Kükenthal in 1938, l.c., as *C. ornans*. The names *Cyperus ornans* and *Cyperus stenophyllus* were published simultaneously. Under these circumstances, according to Art. 56 of the International Rules of Nomenclature, "the author who first adopts one of them, definitely treating another as a synonym or referring it to a subordinate group must be followed." Accordingly, *C. stenophyllus* must be used for the species in its extended sense and Kükenthal erred in changing his earlier treatment in 1936.

I do not think that the two species described by Valckenier Suringar can be distinguished from one another. As here understood *C. stenophyllus* is very close to the Australian *C. Bowmanii* F. Muell. ex Benth. from which it differs in that the spikelets are slightly thicker, more numerous and rather more loosely arranged on the rays, and the base of the plant is harder and moderately swollen, with dark-coloured sheaths. It appears to be restricted to the islands north of Australia from Java and the Philippines to the Solomon Islands and Tonga.

*Cyperus compactus* Retz. Observ. 5: 10. 1789; Kükenth. in Pflanzenr. 101 (IV. 20): 423. 1936, in Engl. Bot. Jahrb. 69: 256. 1938; Ohwi in Bot. Mag. Tokyo 56: 200. 1942; non Lam. (1791 or later).

*Cyperus compactus* f. *decolorans* (Kükenth.) Kükenth. in Pflanzenr., l.c., 424.

*Cyperus dilutus* Vahl, Enum. Pl. 2: 357. 1806; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 193. 1900; Valck. Suring. in Nova Guin. Bot. 8: 700. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 45. 1924.

*Cyperus dilutus* f. *decolorans* Kükenth. in Engl. Bot. Jahrb. 59: 45. 1924.

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., *Brass 7671*, Sept. 1936, conspicuous glaucous species sporadic on swamp-margins and on floating islands in the lake (det. Kükenthal); Dagwa, Oriomo R., *Brass 5921*, Feb.-March 1934, alt.



40 m. shallows of a lagoon on savannah, (tall grey sedge with striate leaves). Central Division: Kanosia, *Carr 11764*, April 1935, sea-level (herb. Canberra).

Carr's collection was cited by Kükenthal (1938, l.c.). Brass's specimens appear to be the only other specimens of this species known from Papua. The species has been reported from North-East and Netherlands New Guinea and extends northwards and westwards to South China and India and has been introduced into Reunion and Mauritius. The f. *decolorans* covers those (herbarium) specimens with paler coloured or faded spikelets and appears to have no real taxonomic significance; see below under *C. Holoschoenus*.

*Cyperus javanicus* Houtt. Nat. II. Hist. 13: Aanwyz. Plaat. (1). t. 88, f. 1. 1782; Merr. in Jour. Arnold Arb. 19: 321. 1938; non. Kükenth.

*Cyperus pennatus* Lam. Illustr. 1: 144. 1791; F. Muell. Pap. Pl. 2: 34. 1886; K. Schum. in Warb. in Engl. Bot. Jahrb. 13: 264. 1891; K. Schum. in Notizbl. Bot. Gart. Mus. Berlin 2: 96. 1898; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 193. 1900; Valck. Suring. in Nova Guin. Bot. 8: 700. 1912; Kükenth. in Pflanzenr. 101 (IV. 20): 476, fig. 53, A-G. 1936.

*Cyperus stuppeus* Forst. f. Prodr. 89. 1786 (*nomen nudum*); Kükenth. in Engl. Bot. Jahrb. 59: 45. 1924.

*Cyperus canescens* Vahl, Enum. Pl. 2: 355. 1806; Guppy in Solomon Islands and Natives 304. 1887.

PAPUA: Western Division: Penzara, between Morehead and Wassi Kussa Rivers, *Brass 8444*, Dec. 1936, savanna forests, on flats of creek; Daru Island, *Brass 6271*, March 1936, frequent on damp soil in garden fallow growths (erect to 70–80 cm.); Daru Island, *Brass 6334*, March 1936, of occasional occurrence on littoral sand ridges. Gulf Division: Maclatchie Point, *Brass 1184*, March 1926, a coast plant. Central Division: Hula, *Brass 379*, October 1925, just above tide mark on sandy foreshores (4 ft. high); Hisiu, *Carr 11390*, Feb. 1935, sea-level, open sandy places near sea-shore (up to 3 ft. tall) (herb. Canberra); Port Moresby, *C. T. White 38*, July 1918, wet swampy places by coast (rather glaucous foliage). Eastern Division: Domara R., *Brass 1592*, May 1926, sea-level, on muddy river bank.

SOLOMON ISLANDS: Bougainville: Karugu, Buin, *Kajewski 2285*, Oct. 1930, sea-level, in swamps close to the sea-shore, common (a plant up to 1 m. high, growing in very wet swampy places, leaves with fine serrate edges, light brown flower-heads, native name "mala-muk teraugow").

This widely spread species has in the literature of New Guinea usually been called *Cyperus pennatus* Lam. I am indebted to Dr. E. D. Merrill for a copy of the appropriate passages and a tracing of the plate connected with Houttyn's binomial. To Merrill's discussion of the name, l.c., it may be added that:

1. No name is directly connected with Houttyn's description of a plant on p. 68, but there is a marginal reference to Plaat LXXXVIII, fig. 1.
2. On p. [III] of this volume, in the explanation of the plates, the binomial *Cyperus Javanicus* is definitely applied to Plaat LXXXVIII, fig. 1, and reference is made to p. 68.
3. The plate consists of a very good figure of an inflorescence with an enlarged figure (marked *a*) of a spikelet. Reference to this "a" is made in the description.

The validity of the binomial appears to rest upon the association of the name in the explanation of the plate with either the figure or with the



description or with both. That is, the formal description of the species is divided into parts, each occurring in different disjunct places in the volume. It is questionable whether this is in strict accord with either the letter or the spirit of Art. 44: "The name of a species . . . is not validly published unless it is *accompanied* (1) by a description, . . . or (3) by a plate or figure showing essential characters" (italics mine).

Kükenthal, in Engl. Bot. Jahrb. 69: 257. 1938, refers *Carr 11390* to *C. pennatus* var. *Armstrongii* (Benth.) Kükenth., a combination made in Pflanzenr. 101 (IV. 20): 479. 1936, and based on *C. Armstrongii* Benth. Fl. Austral. 7: 289. 1878. Bentham cites four collections after his original description: Port Essington, *Armstrong*; Port Darwin, *Schultz 731*; Percy Islands, *A. Cunningham*; Rockingham Bay, *Dallachy*. Dallachy's specimens belong to *C. tetracarpus* Boeck. I have not certainly seen specimens of the other collections cited, though Domin in Biblioth. Bot. 85: 440. 1915 refers Cunningham's specimens to what is here called *C. javanicus* and *Schultz 731* to *Mariscus Armstrongii* C. B. Clarke. C. B. Clarke in Kew Bull. Add. Ser. 8: 17. 1908, describes *Mariscus Armstrongii* sp. n., citing "*Cyperus Armstrongii*, Benth. Fl. Austral. 7: p. 289, quoad *Armstrong*, n. 616." This had best be interpreted as typifying Bentham's species on Armstrong's plant and then transferring the species in its emended sense to *Mariscus*.\* In any case, I do not see how Carr's immature specimen in herb. Canberra can be distinguished from *C. javanicus*.

*Cyperus Holoschoenus* R. Br. Prodr. 215. 1810; Kükenth. in Engl. Bot. Jahrb. 70: 463. 1940.

*Cyperus Holoschoenus* R. Br. var. *fusci-squamatus* Kükenth. in Bull. Jard. Bot. Buitenz. sér. III, 16: 301. 1940.

PAPUA: Western Division: Dagwa, Oriomo R., *Brass 5920*, Feb.-March 1934, alt. 40 m., shallow margins of a lagoon on savannah (tall sedge with shining somewhat scabrid leaves).

This collection is an isotype (or at least a haplotype) of Kükenthal's variety which is diagnosed with the words "Culmus 70 cm. altus. Squamae fuscae." It was also cited merely as *C. Holoschoenus* R.Br. by him in the same year in Engl. Bot. Jahrb. The material seen by me consists of one complete culm about 80 cm. long beneath the inflorescence with innovation shoots at the base and a second inflorescence with the upper part of the culm. The glumes appear to be dull brown, but under the microscope they are seen to be more or less variegated, varying from straw-brown to dull purplish brown. The colour of the glumes varies considerably, partly

\* It might be argued that Clarke left under *Cyperus Armstrongii* the specimens which agreed with Bentham's description, i.e., Dallachy's specimens, which would then be regarded as the type of *Cyperus Armstrongii* Benth., synonymous with *C. tetracarpus* Boeck. He separated the discordant element which to him appeared to represent a new species and described it as *Mariscus Armstrongii* n. sp. The question, if of any real importance, cannot be settled without examining the specimens annotated by Clarke, though Domin's disposition of the specimens concerned probably follows that of Clarke in herb. Kew.



at least as the result of aging of the spikelet, as is well illustrated by some of my specimens from N. Queensland, while variations in conditions during the drying of specimens also produce variations in the colouration of the dried specimens.

Apart from Brass's specimens the species is known only from the far northern parts of Australia.

*Cyperus cyperoides* (L.) O. Ktze. Rev. Gen. Pl. 3 (2): 333. 1898; Kükenth. in Pflanzenr. 101 (IV. 20): 514. 1936; Ohwi in Bot. Mag. Tokyo 56: 201. 1942.

*Scirpus cyperoides* Linn. Mant. 2: 181. 1771.

*Cyperus umbellatus* (Rottb.) Benth. Fl. Hongk. 386. 1861, quoad syn.; sensu F. Muell. Pap. Pl. 2: 34. 1886; sensu K. Schum. & Hollr. Fl. Kaiser Wilhelmsl. 24. 1889; sensu K. Schum. in Warb. in Bot. Jahrb. 12: 264. 1891; non *Kyllinga umbellata* Rottb.

*Cyperus cylindrostachys* Boeck. in Linnæa 36: 383. 1870 (excl. syn.); K. Schum. in Engl. Bot. Jahrb. 9: 195. 1888; Valck. Suring. Nova Guin. Bot. 8: 700. 1912.

*Mariscus Sieberianus* Nees ex C. B. Clarke in Hook. f. Fl. Brit. Ind. 6: 622. 1893; Palla in Rechinger, Denkschr. Math.-Naturw. Kais. Akad. Wiss. Wien 89: 499. 1913.

PAPUA: Central Division: Kubuna, Brass 5614, Nov. 1933, alt. 100 m., common, bed gravel banks.

Widely spread in Africa, tropical and temperate Asia and Australia, and in the West Indies. In New Guinea previously known from Netherlands New Guinea, North-East New Guinea and from "Proclamation Creek" (F. Mueller, l.c.).

This widely spread species has been most commonly known as *C. umbellatus*. The combination is usually attributed to Bentham in Fl. Hongk. 386. 1861, though Kükenthal in Pflanzenr. 101 (IV. 20): 523. 1936 attributes it to C. B. Clarke in Jour. Linn. Soc. 20: 296. 1883. Bentham, l.c., founded the combination on "*Mariscus umbellatus* Vahl; Kunth Enum. ii. 118." The name *Mariscus umbellatus* Vahl, Enum. Pl. 2: 376. 1806, was based on *Kyllinga umbellata* Rottb. Descr. et Icon. 15, t. 4, fig. 2. 1773; this name is not cited by Bentham, probably for the reason explained on p. 20 of the preface: "With regard to the synonymy, I have thought it generally unnecessary to repeat that which is already detailed in the general works referred to in the case of each well-known species." In Fl. Austral. 7: 289. 1878, Bentham cites the name *C. umbellatus*, Benth. Fl. Hongk. 386 with *Kyllinga umbellata* Rottb. in the synonymy. There seems little doubt that Bentham, in the last analysis, in his own mind definitely based his combination on that of Rottboell's, and even excluding the reference in Fl. Austral. the combination would be valid according to some recent interpretations of Art. 37 of the International Rules of Nomenclature, as there is an implied, indirect reference to Rottboell (see Airy-Shaw in Kew Bull. 1938: 256, 1938, and Sprague, Kew Bull. 1939: 322-3. 1939). It is however illegitimate because of the earlier *C. umbellatus* Burm. f. Fl. Ind. 21, t. 9, fig. 1. 1768, and *C. umbellatus* Roxb. Fl. Ind. 1: 205. 1820. *Kyllinga umbellata* Rottb. was based on an African plant which is nowadays regarded as distinct from the form represented by the New Guinea plant. Vahl apparently did not



distinguish the two and this broadened concept was accepted by Kunth and Bentham. Thus Bentham's *name* belongs to the form described by Rottboell, but his *description*, l.c., refers to the form described by Linnaeus, Mant. 2: 181. 1771, as *Scirpus cyperoides*, now known as *Cyperus cyperoides* (L.) O. Ktze.

Subgen. **Kyllingia** (Rottb.) Valckenier Suringar

*Cyperus melanospermus* (Nees) Valck. Suring., Het Gesl. Cyp. in Mal. Archip. 50, t. 2, fig. 8. 1898; Kükenth. in Engl. Bot. Jahrb. 69: 257. 1938.

*Kyllingia melanosperma* Nees in Wight, Contr. Bot. Ind. 91. 1834.

NETHERLANDS NEW GUINEA: Balim R., *Brass 11818*, Dec. 1938, alt. 1600 m., deforested slopes, common on moist sandy soil. PAPUA: Central Division: Mafulu, *Brass 5336*, Sept.-Nov., 1936, alt. 1250 m., seepage on roadside, one locality; Isuarava, *Carr 15469*, Feb. 1936, alt. c. 4000 ft., open places (up to 6 ft. tall) (herb. Canberra).

Carr's collection was cited by Kükenthal, l.c., together with one of Clemens' from North-East New Guinea, the only other collection known from the island. The species ranges from west, central and south Africa through India and China eastwards and southwards to New Guinea. *Brass 11818* is an unusually small individual, the culms being only 15-27 cm. high.

*Cyperus brevifolius* (Rottb.) Hassk. Catal. Hort. Bogor. 24. 1844; Valck. Suring. in Nova Guin. 8: 696. 1912; Kükenth. in Pflanzenr. 101 (IV. 20): 600. 1936.

*Cyperus brevifolius* (Rottb.) Hassk. var. *stellulatus* Valck. Suring. Het Gesl. Cyp. in Mal. Archip. 48, t. 2, fig. 5. 1898; Kükenth., l.c., 603, in Engl. Bot. Jahrb. 69: 257. 1938.

*Kyllingia brevifolia* Rottb. Descr. et Icon. 13, t. 4, fig. 3. 1773; Palla in Rechinger, Denkschr. Math.-Naturw. Kais. Akad. Wiss. Wien 89: 500. 1913; Ridl. in Trans. Linn. Soc. II, Bot. 9: 241. 1916; Kükenth. in Engl. Bot. Jahrb. 59: 42. 1924; H. J. Lam in Nat. Tijdschr. Ned. 88: 272. 1928.

*Kyllingia brevifolia* Rottb. var. *stellulata* (Valck. Suring.) Ohwi in Bot. Mag. Tokyo 56: 199. 1942.

NETHERLANDS NEW GUINEA: 4 km. SW. of Bernhard Camp, Idenburg R., *Brass 13256*, March 1939, alt. 850 m., rain-forest, gregarious on sandy beaches in river; 9 km. NE. of Lake Habbema, *Brass 10730*, Oct. 1938, alt. 2800 m., erect in dense clumps on a native clearing in forest; same locality and date, *Brass 10739*, on native clearing in forest. PAPUA: Western Division: Gaima, Lower Fly R. (east bank), *Brass 8303*, Nov. 1936, sporadic on open sandy foreshores. Central Division: Kubuna, *Brass 5687*, Nov. 1933, alt. 100 m., common, river bottom sandbanks.

Almost cosmopolitan, but not previously recorded for Papua.

*Cyperus brevifolius* var. *stellulatus* (*Kyllingia intermedia* R.Br.) comprises individuals with smooth, not spinulose keels to the glumes. Neither this nor the other characters enumerated by Kükenthal, l.c., are in any way constant and occur in varying combinations. I have found glumes with smooth keels and spinulose keels on the same plant.

*Cyperus Kyllingia* Endl. Catal. Hort. Acad. Vindob. 1: 94. 1842; Kükenth. in Pflanzenr. 101 (IV. 20): 606, fig. 64, C-D. 1936; Fosberg in Lloydia 3: 111. 1940.

*Cyperus Kyllingia* Endl. f. *humilis* (Boeck.) Kükenth., l.c., 608. 1936.

*Cyperus Kyllingia* Endl. f. *subtriceps* (Kunth) Kükenth., l.c., 608. 1936.

*Cyperus monocephalus* (Rottb.) F. Muell. Fragm. 8: 271. 1874; Valck. Suring. in Nova Guin. Bot. 8: 695. 1912, non Roxb.



*Kyllinga monocephala* Rottb. Descr. et Icon. 13, t. 4, fig. 3. 1773; F. Muell. Pap. Pl. 1: 31. 1876; Becc. in D'Albertis, New Guinea 2: 399. 1880; Guppy, Solomon Islands and Natives 304. 1887; K. Schum. in Engl. Bot. Jahrb. 13: 265. 1891, in Notizbl. Bot. Gart. Mus. Berlin 1: 47. 1895, 2: 96. 1898; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 194. 1900; Palla in Rechinger, Denkschr. Math.-Naturw. Kais. Akad. Wiss. Wien 89: 499. 1913; Ridl. in Trans. Linn. Soc. II, Bot. 9: 241. 1916; Kükenth. in Engl. Bot. Jahrb. 59: 41. 1924; Ohwi in Bot. Mag. Tokyo 56: 199. 1942.

*Kyllinga monocephala* Rottb. var. *mindorensis* Boeck. in Linnaea 35: 428. 1868; K. Schum. & Hollr. Fl. Kaiser Wilhelmsl. 24. 1889.

*Kyllinga monocephala* Rottb. f. *subtriceps* Kunth, Enum. Pl. 2: 130. 1837; Kükenth. in Engl. Bot. Jahrb. 59: 42. 1924.

PAPUA: Western Division: Daru Island, *Brass* 6401, March 1936, common on wet ground (inflorescence white) (det. Kükenthal). Central Division: Baroka, Mekeo District, *Brass* 3746, April 1933, alt. 30 m., common, banks of small creek in rain-forest (flower heads white); Budatobara, *Brass* 766, Dec. 1925, alt. 300 ft., wet creek-banks.

SOLOMON ISLANDS: San Cristobal: Waimamura, *Brass* 2803, Sept. 1932, alt. 0 m., common, a weed on garden pathways (inflorescence white).

Pantropical. It seems superfluous and misleading to distinguish nomenclaturally such states as f. *humilis* and f. *subtriceps*. The former refers to depauperate specimens and the latter to robust states. *Brass* 3746 shows the "typical" form and f. *subtriceps* on the same rhizome and *Brass* 6401 is not very different.

#### Subgen. *Torulinium* (Desv.) Kükenthal

*Cyperus ferax* L. C. Rich. in Act. Soc. Hist. Nat. Paris 1: 106. 1792; Warb. in Engl. Bot. Jahrb. 18: 186. 1893; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 194. 1900; Kükenth. in Engl. Bot. Jahrb. 59: 46. 1924, in Pflanzenr. 101 (IV. 20): 615. 1936, fig. 6, K-P. 1935; Ohwi in Bot. Mag. Tokyo 56: 201. 1942.

?*Cyperus novae-hannoverae* Boeck. in Engl. Bot. Jahrb. 5: 91. 1884; Valck. Suring. in Nova Guin. Bot. 3: 701. 1912.

?*Cyperus ferax* L. C. Rich. var. *novae-hannoverae* (Boeck.) Kükenth. in Engl. Bot. Jahrb. 59: 4, 46. 1924; in Pflanzenr. 101 (IV. 20): 618. 1936.

*Torulinium ferax* (L. C. Rich.) Urban, Symb. Antill. 2: 165. 1900; Palla in Rechinger, Denkschr. Math.-Naturw. Kais. Akad. Wiss. Wien 89: 499. 1913.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg R., *Brass* 13790, April 1939, alt. 50 m., on logs floating in oxbow lakes and backwaters. PAPUA: Central Division: Ihu, Vailala R., *Brass* 1015, Feb. 1926, alt. 0 m., sago-swamp borders.

In Pflanzenr. 101 (IV. 20): 618. 1936, Kükenthal cites *Brass* 1015 under *C. ferax* var. *novae-hannoverae* and it is on this authority that I have suggested treating *C. novae-hannoverae* Boeck. as synonymous with *C. ferax*. *Brass* 1015 is a decidedly immature specimen.

#### *Eleocharis* R. Brown

*Eleocharis fistulosa* Link in Spreng. Jahrb. 3: 78. 1820.

PAPUA: Western Division: Dagwa, Oriomo R., *Brass* 6010, Feb.-March 1934, alt. 45 m., erect soft-textured sedge in shallow margins of a lagoon on savannah, uncommon.

New for New Guinea. A widely spread but apparently uncommon species known from Africa, S. and E. Asia, NE. Australia and from Mexico



and the West Indies to Argentina.

*Eleocharis laxiflora* (Thwaites) H. Pfeiff. in Mitt. Inst. Bot. Hamburg 7: 169. 1928.  
*Scirpus laxiflorus* Thw. Enum. Pl. Zeyl. 435. 1864.

*Eleocharis variegata* (Poir.) Presl var. *laxiflora* (Thwaites) C. B. Clarke in Hook. f. Fl. Brit. Ind. 6: 626. 1893; Kükenth. in Engl. Bot. Jahrb. 59: 47. 1924; 69: 257. 1938 (as *Heleocharis*).

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., Brass 7630, August 1936, scattered among coarse sedges, etc., of floating islands (det. Svenson).

New for Papua. Previously known from North-East New Guinea to India and from Micronesia and Polynesia.

*Eleocharis dulcis* (Burm. f.) Trin. ex Henschel, Vita Rumph. 186. 1833; Svenson in Rhodora 41: 11. 1939.

*Andropogon dulce* Burm. f. Fl. Ind. 219. 1768.

*Eleocharis plantaginea* (Retz.) R. & S. Syst. 2: 150. 1817; K. Schum. in Notizbl. Bot. Gart. Mus. Berlin 2: 97. 1898; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 195. 1900; Valck. Suring. in Nova Guin. Bot. 8: 702. 1912 (all cited as *Heleocharis plantaginea* R. Br.).

PAPUA: Western Division: Mainland opposite Daru Island, Brass 6064, March 1934, dominant plant in large coastal swamp (stems cylindrical, shining dark green); Daru Island, Brass 6288, March 1936, extensive pure bright green even stand surrounding central open water of large swamp (plant  $\pm$  60 cm. high, half below water-level); coast between Oriomo and Fly Rivers, Brass 6467, April 1936, extensive pure stand filling freshwater swamp. Central Division: Isuarava, Carr 15619, Feb. 1936, alt. c. 4000 ft., damp places in the open (used by Biagi people in making skirts for their women; Biagi name: lorio) (herb. Canberra); Boridi, Carr 12992, Sept. 1935, alt. c. 4500 ft., source of stream in forest clearing (herb. Canberra).

The species extends from SE. Asia to Madagascar, Australia and Fiji. Brass's specimens had been previously determined by Svenson. Carr's specimens were referred to "*Heleocharis equisetina* Presl" by Kükenthal in Engl. Bot. Jahrb. 69: 257. 1938, but well-developed specimens of *E. equisetina* are distinguishable by having firmer culms, firmer, broader, shorter, subtruncate (not rounded), more or less shining glumes which are somewhat incurved when dry, hypogynous bristles more slender and quite free from one another (not conspicuously connate at the base), long-apiculate anthers, and bright-brown nut with acutely costulate margins and more regularly arranged external cells. But Carr's specimens are not very satisfactory and are in flower only.

*Eleocharis spiralis* (Rottb.) R. & S. Syst. 2: 155. 1817.

*Scirpus spiralis* Rottb. Descr. et Icon. 45. t. 15, f. 1. 1773.

PAPUA: Western Division: Daru Island, Brass 6287, March 1936, forms extensive practically pure stands, 50-60 cm. high in shallow swamp-margins (det. Svenson).

New for New Guinea; elsewhere known from Mauritius, Madagascar, SE. Asia, Borneo, Philippine Islands, NE. Australia and New Caledonia.

*Eleocharis pellucida* Presl, Rel. Haenk. 1: 196. 1830.

NETHERLANDS NEW GUINEA: 9 km. NE. of Lake Habbema, Brass 10729, Oct. 1938, alt. 2800 m., abundant in a clearing surrounding a native house in the forest.

New for New Guinea. Previously recorded from SE. Asia to Borneo and the Philippine Islands.



### Bulbostylis Kunth

**Bulbostylis barbata** (Rottb.) C. B. Clarke in Hook. f. Fl. Brit. Ind. 6: 651. 1894; K. Schum. & Lauterb. Nachtr. Fl. Deutsch. Schutzgeb. Südsee 59. 1905; Kükenth. in Engl. Bot. Jahrb. 59: 51. 1924, 69: 258. 1938.

*Isolepis barbata* (Rottb.) R. Br. Prodr. 222. 1810; F. Muell. Pap. Pl. I: 46. 1876.

*Fimbristylis barbata* (Rottb.) Benth. Fl. Austral. 7: 321. 1878; Valck. Suring. in Nova Guin. Bot. 8: 704. 1912.

PAPUA: Western Division: Daru Island, *Brass* 6385, March 1936, a wet seasonal ephemeral common on patches of hard compacted soil (det. Uittien as *Fimbristylis barbata*). Central Division: Rona, Laloki R., *Brass* 3575, alt. 450 m., April 1933, common on flat rock surfaces.

Cosmotropical. The authorship of the combination under *Bulbostylis* is usually credited to Kunth, Enum. 2: 208. 1837, but it was first formally made by C. B. Clarke, l.c.

Specimens of this species were erroneously referred to *Scirpus setaceus* L. by K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 195. 1900.

*Bulbostylis barbata* f. *paupercula* Kükenth. in Engl. Bot. Jahrb. 70: 463. 1940, is evidently based on small plants with 1–2 spikelets. Such reduced states are frequently met with in annual members of the family and it seems quite unnecessary to distinguish them nomenclaturally.

### Fuirena Rottboell

**Fuirena umbellata** Rottb. Descr. et Icon. 70, t. 19, fig. 3. 1773; F. Muell. Pap. Pl. 2: 18. 1885; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 194. 1900; Valck. Suring. in Nova Guin. Bot. 8: 706. 1912; Kükenth. in Engl. Bot. Jahrb. 59: 52. 1924.

PAPUA: Western Division: Lake Daviumbu, Middle Fly R., *Brass* 7632, Aug. 1936, sporadic on floating islands and marshy shores of lake (det. Uittien); Gaima, Lower Fly R. (east bank), *Brass* 8258, Nov. 1936, common in swampy watercourses in savannah forest; Wuroi, Oriomo R., *Brass* 5747, Jan.–March 1934, alt. 10–20 m., straggling on a coarse sedge formation in a small swamp on savannah (stem 5-angled); Mabaduan, *Brass* 6540, April 1936, mixed with grasses in shallow rain-pools in savannah forest (det. Uittien).

### Lipocarpha R. Brown

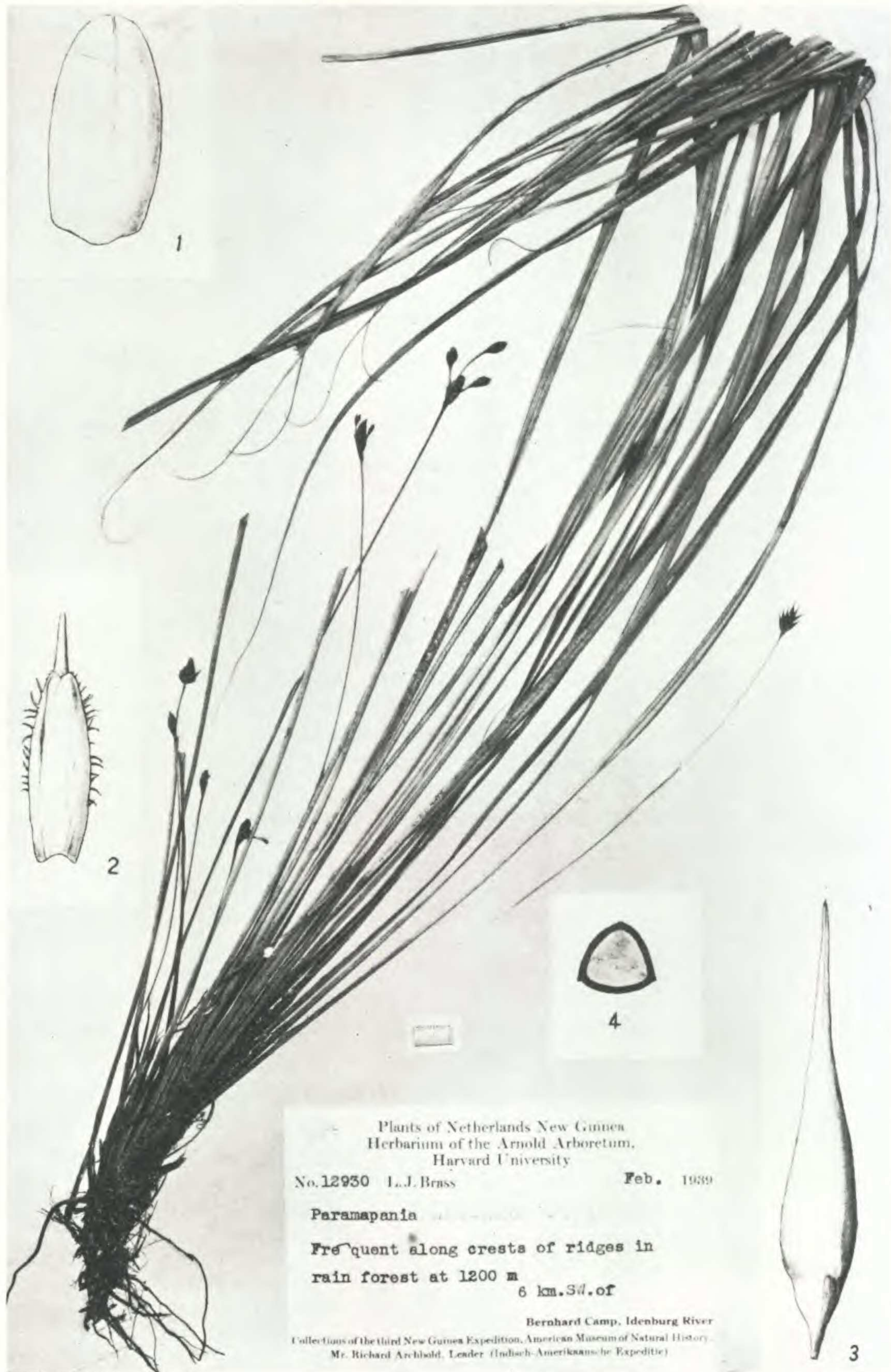
**Lipocarpha microcephala** (R. Br.) Kunth, Enum. 2: 268. 1837; F. Muell. Pap. Pl. 2: 34. 1886; Kükenth. in Engl. Bot. Jahrb. 59: 51. 1924; Ohwi in Bot. Mag. Tokyo 56: 204. 1942.

*Hypaelyptum microcephalum* R. Br. Prodr. 220. 1810.

PAPUA: Western Division: Daru Island, *Brass* 6246, March 1936, sporadic in damp soil of savannah forests (det. Uittien).

The species extends from Australia to tropical Asia. This is the first definite locality recorded for Papua. F. Mueller, l.c., and Domin in Biblioth. Bot. 85: 468. 1915 ascribe the combination *Lipocarpha microcephala* to R. Brown in Tuckey's Narr. Exped. Congo 459. 1818; but Brown made no such combination. The pertinent passage reads: "*Hypaelyptum argenteum* . . . is also in the collection. The name *Hypaelyptum*, under which I have formerly described the genus that includes *H. argenteum*<sup>3</sup> . . ." with a footnote reference to "*Prodr. Flor. Nov. Holl.* 1, p. 225."





PARAMAPANIA ATTENUATA S. T. BLAKE